08/072,206

IN THE CLAIMS:

Please amend claims 1, 6 and 8-11 as follows:

1. (Amended) An integrated circuit probe card inspection system for [determining the relative location of] probes in a probe array, comprising:

a viewing system for providing [an] a digital image of the tip of each probe [in a digital form],

a window with a flat surface contacted by each of said probe tips, said viewing system obtaining said digital image of each probe tip through said window,

a computer means with software means to analyze the [probe image] position of each probe within the [video] digital image, [and]

positioning means to determine the position of each probe in [position the center of] the digital image relative to a known physical position in order to determine the location of the probes relative to each other [with said probe contact in the field of view], and

automated means for evaluating a characteristic of at least one bus probe included in said probe array based on said relative location information.

6. (Amended) An integrated circuit probe card inspection system for determining the location and length of [the] a scrub mark which would be made by a probe tip on an integrated circuit bonding pad, comprising:

a viewing system for providing [an] a digital image of the probe tip [in a digital form],

a window with a flat surface contacted by said probe tip, said viewing system obtaining said digital image through said window in a first state where said probe tip is driven in contact with said window with a first force, and in a second state where said probe tip is driven in contact with said window with a second force, said second force being different from said first force,

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a [computer] computerized means with software means to analyze the position of the probe tip [image position] within the [video] digital image in said first and second states, and for determining the location and length of the scrub mark based on said positions[, and

positioning means to position the center of the digital image to a known physical position with said probe tip in the field of view].

8. (Amended) An apparatus for determining the length of a probe tip included on a spring contact probe having a shank from which said probe tip extends, comprising:

contacting means for sequentially contacting a distal end of the probe [the] tip and the [beam] shank of [a] the spring contact probe,

positioning means for controlling X, Y and Z axis movements of said contacting means,

[measuring means for determining the angle of the scrub mark created by the probe tip upon contact and overdrive against a surface,

measuring means for determining the position of the beam portion of the probe from the position of the tip and the angle of the scrub mark,]

measuring means for [determining] measuring the [vertical] height of each contacted point [from a known reference], and

calculating means for determining [the] a difference in the two measured heights, said difference being representative of [representing] the length of the probe tip.

9. (Amended) A method for learning [the] probe tip locations [of] for a plurality of probe tips in an existing known good probe card, said method comprising the steps of [by]:

capturing a digitized image of each probe tip on the probe card, [then]

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determining the relative position of each probe tip with respect to the other probe tips on the probe card, [then] and

constructing a file of said relative position information for use in determining [the] correct placement of probe tips on other probe cards of [the] a same type.

16. (Amended) A method for determining [the] an orientation and spatial position of an array of probes with respect [the] to a test apparatus [for determining probe position by], said method comprising the steps of:

positioning [the] a video microscope field of view within the array of probes, and

moving the field of view in a [known] predetermined direction along [the] an original axis in an X or Y dimension of the array, [chip corresponding to the probe card, and]

checking for probes appearing in the field of view during said movement, [and]

if no probes are found along the predetermined direction of the original axis selected, moving the field of view along the opposite direction of [that] the original axis and along [the] positive and negative directions of [the other] an axis perpendicular to the original axis, no more than the dimension of the chip in [that] in the respective axis, until probes are found in the field of view, [and]

digitizing [the] an image of any probe tips found by the video microscope within the field of view, [and]

determining by electrical means which probe of the array is being viewed by the video microscope, and

comparing the information thus obtained to predetermined [the] X, Y probe locations of the probe array to determine the orientation of the probe array with respect to the X and Y axes and the location of at least one probe in the array.